

Algebra /

Solving a word problem using a quadratic equation with irrational roots...

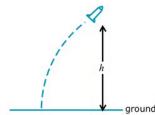
Solving a word problem using a quadratic equation with irrational roots

A model rocket is launched with an initial upward velocity of 105 ft/s. The rocket's height h (in feet) after t seconds is given by the following.

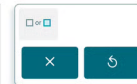
$$h = 105t - 16t^2$$

Find all values of t for which the rocket's height is 34 feet.

Round your answer(s) to the nearest hundredth.
 (If there is more than one answer, use the "or" button.)



$t =$ seconds



$$t = ?$$

$$h = 34$$

$$h = 105t - 16t^2$$

$$34 = 105t - 16t^2$$

$$0 = -16t^2 + 105t - 34$$

$$a = -16 \quad b = 105 \quad c = -34$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$ax^2 + bx + c = 0$$

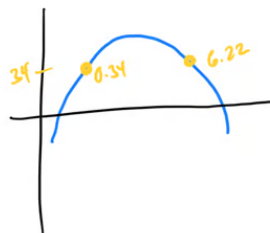
$$\frac{-105 \pm \sqrt{(105)^2 - 4(-16)(-34)}}{2(-16)}$$

$$\sqrt{11025 - 2176}$$

$$\sqrt{8849}$$

$$94.07$$

$$\frac{-105 \pm 94.07}{-32}$$



$$\frac{-105 + 94.07}{-32} = 0.34$$

$$\frac{-105 - 94.07}{-32} = 6.22$$